SUB 212

400-Watt | Push-Pull active subwoofer

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SUB 212

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SUB 212

USER MANUAL • SAFETY INSTRUCTIONS

AVIS: RISQUE DE CHOC ELECTRIQUE
NE PAS OUVIR

WARNING: To reduce the risk of fire or electrical shock, do not expose this equipment to rain or moisture. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified personnel.

1 READ INSTRUCTIONS - Read all safety and operating instructions before operating this product.

2. RETAIN INSTRUCTIONS - Retain these safety and operating instructions for future reference.

3. HEED WARNINGS - Follow all warnings on this product and in the operating instructions.

4. FOLLOW INSTRUCTIONS - Follow all operating and use instructions.

5. ATTACHMENTS - Do not use attachments not recommended by the product manufacturer as they may cause hazards.

6. WATER AND MOISTURE - Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub; in a wet basement; or near a swimming pool; and the like.

7. ACCESSORIES - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with accessories recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.

8. POWER SOURCE - This product should be operated only from the type of power source indicated on the marking label on the back of the product. It is ***IMPORTANT*** to confirm that the voltage selector switch on the back of the SUB 212 is set to the proper voltage setting. If you are unsure of the type of power that is supplied to your home, consult your product dealer or local power company.

9. LIGHTNING- For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet. This will prevent damage to the product due to lightning and power-line surges.

10. OVERLOADING - Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock.

11. LIQUID ENTRY - Never spill any liquid of any kind on the product.

12. SERVICING - Do not attempt to service this product yourself. Opening or removing covers, including any over bottom or side speaker drivers, may expose you to dangerous voltage or other hazards. Refer all service to qualified service personnel.

13. DAMAGE REQUIRING SERVICE - Unplug this product from the wall outlet and refer servicing to qualified personnel under the following conditions:

    a. When the power-supply cord or plug is damaged.
    b. If liquid has been spilled, or objects have fallen into this product.
    c. If the product does not operate normally by following the operating instructions. Adjust only controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
    d. If the product has been dropped or damaged in any way.
    e. When the product exhibits a distinct change in performance - this indicates a need for service.

14. REPLACEMENT PARTS - When replacement parts are required be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in risk of fire, electric shock, or other hazard.

15. SAFETY CHECK - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

16. HEAT - This product should be situated away from heat sources such as radiators, heat registers, stoves, or other products that produce heat.

17. MOUNTING: Unsafe mounting or overhead suspension of any heavy load can result in serious injury and equipment damage. Mounting a speaker should be done by qualified persons in accordance with all applicable local safety and construction standards. Be certain to follow the instructions provided by the manufacture the mounting bracket, be certain that is capable supporting the weight of the speakers to be mounted.

SUB 212

1. SUB 212 Introduction

World-renowned for their accurate, full-range sound, Blue Sky studio monitoring systems are used in critical listening applications by audio professionals in a wide variety of industry sectors. Emmy Award-winning sound editor Eric Lalicata, Grammy Award-winning engineer/remixer Roger Sanchez and legendary Talking Heads keyboard/guitarist Jerry Harrison all rely on Blue Sky speakers to check the accuracy of their work before it goes public. And it's the same story at film sound facility Skywalker Sound and broadcaster ESPN, where Blue Sky speakers once again provide an important link in the production chain.

Blue Sky's fresh approach to studio monitor design delivers the highest possible ratio of performance to cost, in turn providing the highest value to our customers.

Making the subwoofer (SUB) an integral part of the monitor system design enables a studio monitor, such as the SAT 8, to be positioned for the best imaging, and the SUB to be positioned for the best bass response. Relieving the studio monitor of the requirement to reproduce the low frequencies means that the uncompromising sealed-box design, can combine with sophisticated bass management electronics, to provide a seamless transition between the SAT and SUB.

It all adds up to accurate, full range sound.

To that end we are proud to introduce the SUB 212. Blue Sky's SUB 212 is a sealed box, dual 12", push-pull, 400-Watt subwoofer. It features an anechoic frequency response of 25Hz to 200Hz, +/-3dB. In addition, the SUB 212 also has built-in 2.1 bass management electronics with both a 4th order 80Hz Linkwitz-Riley low-pass filter and a 2nd order 80Hz high-pass filter that is perfectly matched to the response of the SAT 8 (the SUB 212 is also compatible with the SAT 12, SAT 6.5 and SAT 5).

More about the Push-Pull Design:

In the SUB 212 "push-pull" subwoofer, one 12" woofer is mounted conventionally on the front baffle of the cabinet and the second is mounted inverted, out of the bottom of the cabinet. The front of the woofer, which is mounted on the bottom of the cabinet, has its cone facing the inside of the cabinet, with the back side of the cone, frame and motor / magnet structure facing the outside. Although both woofers operate acoustically in-phase, one with the front side of its cone and the other with the back side, they operate mechanically out-of-phase, relative to each others magnet structures. Therefore, when a signal is being reproduced by the subwoofer, each cone is always in the exact opposite position from the other, relative to its own magnet. Because the even-order harmonic distortion components of each woofer are both virtually equal and exactly opposite in time / phase to each other, these even-order harmonic distortion components for each woofer are cancelled acoustically. These even-order harmonic distortion components are typically caused by non-linearity in the cone's motion, such as when the voice coil is moving deep into the gap and towards the magnet, as compared with when it is moving partially out of the gap and away from the magnet.

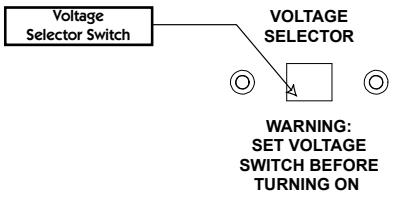
As an additional benefit, in comparison to a SUB 12, the SUB 212 also has 6dB more output, thanks the doubling in both power and cone area.

When combined, the SAT 8 and SUB 212 provide a stunningly accurate and engaging, full-range monitoring system. We know you will agree...

Thank you for choosing Blue Sky!

2. Important notes about the SUB 212 and this manual.

Voltage Selector Switch:
Prior to powering this unit, please confirm that the voltage selector switch, located on the back of the SUB 212, has been set to the correct voltage setting. If you are unsure of the type of power that is supplied to your home, consult your product dealer or local power company.



This Owner's Manual:
This manual addresses SUB 212 stereo / 2.1 applications. For information about 5.1 (or beyond) setup, please consult the manual that comes with the BMC MK II or visit the Blue Sky web site (address listed below).

Please read this owner's manual carefully and contact Blue Sky International if you have any comments or questions. Contact information can be found on page 13 or you can visit: **www.abluesky.com**

3. The SUB 212, what is included?

Each SUB 212 includes the items listed below. Please carefully unpack each item and inspect the components for damage. If any part of the system has been damaged, please contact the dealer that supplied the product or Blue Sky directly.

SUB 212 Inventory:

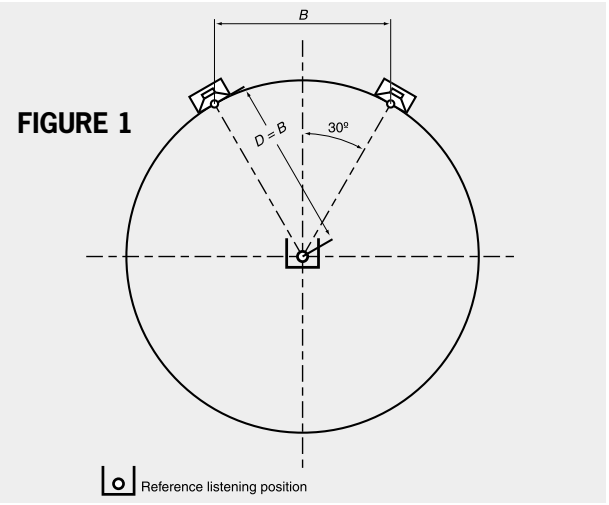
1	SUB 212
1	Power Cable
1	Owner's Manual
1	Warranty Card
4	Subwoofer Isolation Feet

SUB 212

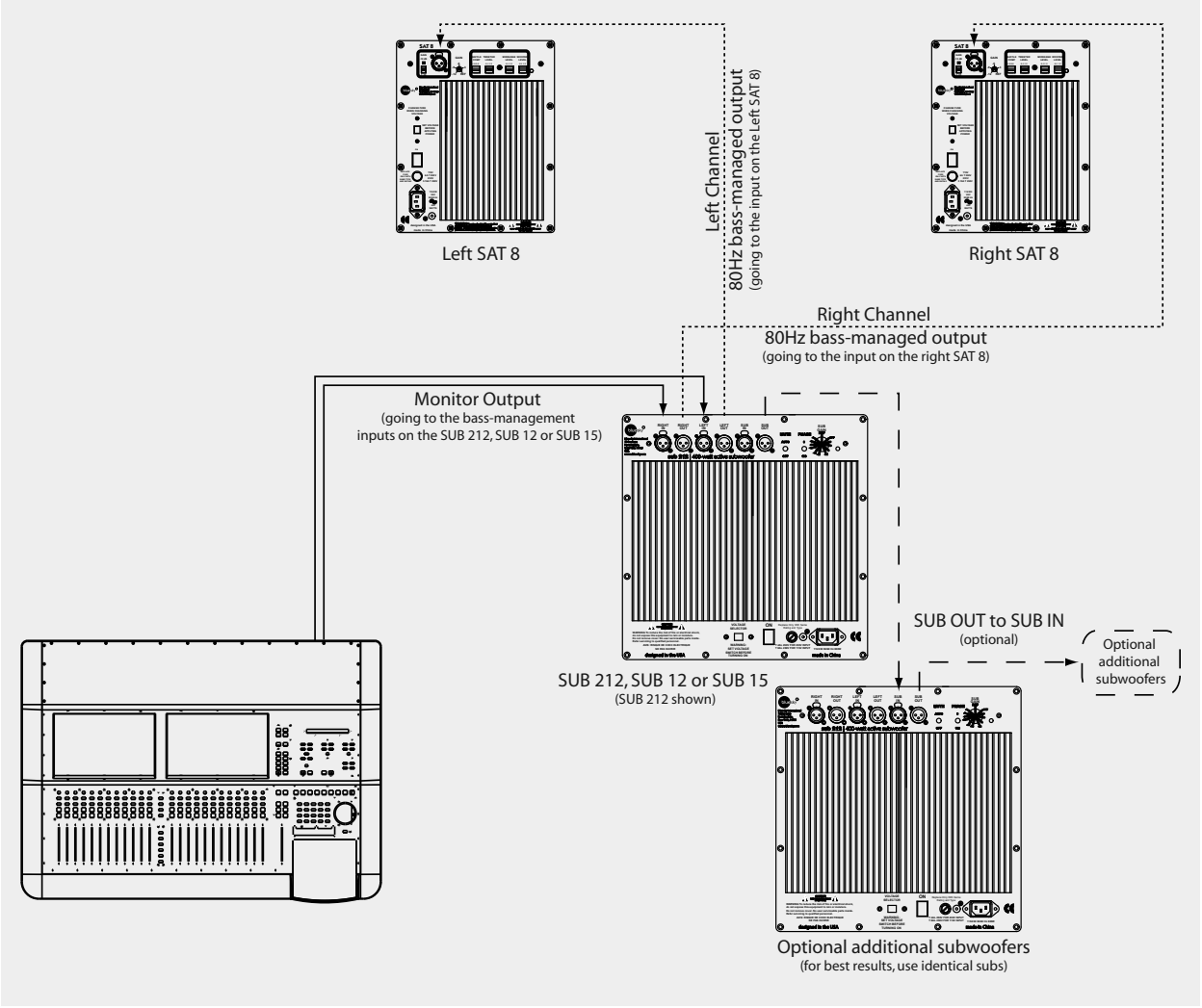
USER MANUAL • 4 • QUICK SETUP

1. If you haven't already done so, carefully remove all items from the packaging and confirm that everything that is listed on page 4 is included [SUB 212 - What is included?].
2. The SUB 212, is compatible with balanced XLR connectors / cables. The total number of XLR cables needed will depend on the system configuration. However for a basic 2.1 system, with one sub, you need a minimum of four XLR Cables. For more information on connecting your system, please see page 6 [System Signal Flow & Connections].
3. The first step in the installation process is to position the active subwoofer. Although you have great flexibility with regard to where an active subwoofer can be placed, a good starting point is centered between the left and right satellite speakers. This could be under a console / desk, behind the console / desk, etc. If you are using multiple subwoofers, you have even more flexibility. For an expanded subwoofer placement guide, please see page 10 [Subwoofer Placement Guide].
4. Once the subwoofer is in position, connect the two input cables from the left and right analog outputs from the mixing console, digital workstation or other source, to the left and right inputs on the subwoofer. For more information on connecting your system, please see page 6 [System Signal Flow & Connections].
5. Next, place the SATs into position. The recommended position for the monitors is based on an ITU standard and sets the speakers at 60 degrees from the listener, forming an equilateral triangle (a triangle with equal sides) - See Figure 1. Fortunately, this setup eliminates most of the math and is easily simplified to the following guidelines: If you want to sit 2 meters from the speakers, place the speakers 2 meters apart. If you want to sit 9 ft. from the speakers, place the speakers 9 ft. apart Etc. Ideally the SATs should be at seated ear height. If this is not possible, tilting the cabinet at the listening area can improve high-frequency coverage.
6. Once all the SATs are properly placed, connect the XLR cables from the left output on the back of the sub, to the 80Hz input on the left SAT. Now do the same for the right channel, connecting the right output to the right SAT. Lastly, please plug the power cords into the IEC connectors on the SATs and the subwoofer(s). Prior to proceeding confirm that the system is wired correctly, as shown on page 6 [System Signal Flow & Connections].
8. At this point the Blue Sky monitoring system is correctly configured, and ready for the final step in the installation. Prior to plugging the system into the wall outlet, and powering up the system, do a final quick check of all connections and level settings.
9. If everything is correct, plug the power cords into an appropriate outlet / circuit. Do not turn on the power switches, yet! Some mixers and out-board equipment such as D-to-A converters and equalizers generate loud rail-to-rail pops when they initially turn-on. Depending on the level and the gain setting of the monitoring system, these pops could damage the monitors. To avoid this, always turn on equipment in the following sequence: All sources and mixer first, and then the monitoring system. Reverse this procedure when shutting down your equipment.

FIGURE 1



10. At this point the Blue Sky monitoring system is fully operational, and ready for use. Begin by playing familiar pieces of music (preferably reference quality recordings, with dynamic and full-range sound) which can assist you in the fine-tuning and exact positioning of both the SATs and the active subwoofer. It is important to remember that the positioning of the subwoofer in the room will impact the subwoofer level. You may find it necessary to increase or decrease the level from the reference position. This is OK, and is anticipated.
11. If a more exacting setup is required, using test signals and a SPL meter, please see Page 7 [Expanded Calibration Guide].
12. Just remember - Use your ears, they are the best audio tool you have and you will be amazed how accurate the setup can be if you use familiar, high quality audio material during the setup of the system.
13. Congratulations! You have now completed the setup of one of the world's finest monitoring systems. If you have any questions, please do not hesitate to contact us directly with your questions: Call (516) 249-1399 (9:00am to 5:30pm EST), e-mail at support@abluesky.com or visit the Blue Sky Forum at www.abluesky.com.



2.1 SYSTEM SIGNAL FLOW & CONNECTIONS

Above is a simple diagram showing how a SAT 8 / SUB 212 system may be wired for a stereo applications. The system shows a full-range source (the console) is wired to a SUB 212 subwoofer and from there the subwoofer outputs are connected to the inputs on the SAT 8.

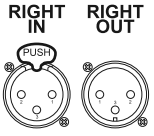
Multiple Subs:

The diagram above also shows the optional use of multiple subwoofers. Multiple subwoofers can be used to increase SPL and improve the LF response of the system, by placing the subwoofers so as to smooth out the LF response at the mix / monitoring position. Please note that we recommend that you run the subs in MONO, by using the subwoofer out on the main sub and then feeding the next sub in the chain.

We do not recommend running stereo subwoofers, because the LF response in the room will not be as consistent using this method. This is because electrical summation of the LF signals (as is done with bass-management using a mono subwoofer / LF signal), is a very predictable and repeatable way to get consistent LF response. LF phase issues between channels are resolved in the most absolute and accurate way - electrically.

Cable and connector wiring:

Use high-quality, shielded cables to connect your console, workstation or other sources to your SUB 8 / SUB 212 system. Foil-shielded cables, such as Belden 8451, 8761, or 9501 should do quite well. Other high quality cables are available and those that incorporate better shielding will yield an overall higher noise rejection, lowering your systems susceptibility to external interference. Another important tip to keep in mind when wiring your system is to route all line level cables away from the AC and other power sources, this will reduce the probability of having AC hum emanating from your monitoring system.



	XLR	TRS	RCA
HOT (+)	Pin 2	Tip	Tip
COLD (–)	Pin 3	Ring	
SHIELD (GROUND)	Pin 1	Shield	Shield

Instructions for electroacoustic calibration of a 2.1 audio system using a SPL meter and Blue Sky's test files.

Before starting this procedure you will need to download BlueSkyTestFiles.zip (an 18 MB zip file) by going to www.abluesky.com website. To download the test file, "Right Click" and select "Save Target As". The file will begin downloading once a location has been selected.

Once downloaded, either burn the test files to a CD or import them into your DAW and follow the instructions below.

ADDITIONAL REQUIRED ITEMS

1. 2.1 Monitoring System
2. SPL Meter - such as the SPL meter sold by RadioShack in the U.S.

BlueSkyTestFiles.zip Includes 4 files:

- 1000Hz SINEWAVE -20dBFS.wav – a 1kHz file recorded at -20dBFS for electrical calibration
- 40-80Hz PINK NOISE -20dBFS.wav – a 40Hz to 80Hz bandwidth limited pink-noise file recorded at -20dBFS
- 500-2.5kHz PINK NOISE -20dBFS.wav – a 500Hz to 2.5Hz bandwidth limited pink-noise file recorded at 20dBFS
- Pink Noise full bw -20dBFS.wav – a full-bandwidth pink-noise file recorded at - 20dBFS

These test files are all mono files. Please make sure you hard assign them to the left and then the right, not both channels at the same time. If you are using a CD player use only one channel of the CD player.

THEORY

The purpose of calibration is to adjust the overall electroacoustic system gain so that 0dBVU of electrical signal level equals a certain acoustic level at the listening position. Since most recording media is now digital, the reference electrical signal level is usually –20dBFS with 20dB of headroom. The reference SPL level however can vary based on the delivery media and speaker type.

Please note that the bandwidth limited signals that have been provided, limit many of the room interaction affects often associated with measuring SPL and broadband pink noise.

All test signals are recorded at –20dBFS including the 1 kHz sine wave tone. The sine wave tone is used to set the electrical output level throughout the signal path, right up to the point you get to the speakers, while the various pink noise signals are used for acoustic measurements and calibration.

The following procedure assumes you are calibrating the system to 85dBc SPL.

Step 1 TURN OFF THE MONITORING SYSTEM (until step 4)

Step 2 Remove all eq and dynamics from the signal path and set all controls to zero / unity gain. Play the 1kHz Sine Wave, hard assign it to the left channel only, and adjust the output fader so the output meter reads -20dBFS. If you are using an analog console, set the output level to 0 VU. Then hard pan the signal to the right channel output and repeat for the right channel. Once calibrated do not move the output faders.

Step 3 Mute everything and make sure the 1kHz tone is OFF .

Step 4 Now that the system has been electrically calibrated turn ON the SUB 212 / SUB 212 2.1 Monitoring System.

Step 5 Assign the 500-2.5kHz pink noise signal to the left channel only. Make sure there is nothing coming from the right channel (or any other channels). Because this signal is bandwidth limited, you don't have to worry about turning the sub off.

There are two methods of setting the levels:

A. If you have a master monitor level control (console etc), you can set the SUB 212 gain control at reference and then adjust the monitor gain control for 85 dBc. Then mark the monitor level as your reference position.

B. The other method is to set master monitor level (console etc.) to the position you want reference level to be (such as unity gain as determined by the electrical calibration process in beginning of these instructions) and then use the volume control on the SUB 212 to set 85 dBc. If you use this method you should make a note of the positing, so you can always go back to the new "reference level" if the pot gets moved.

For either method:
SPL should be measured at the mix position, with the SPL meter at arms length, with the microphone at seated ear height, angled at approximately 45 degrees, and pointed at the center point between the left and right speakers.

Once the left channel is set to 85dBc, repeat this step for the right channel

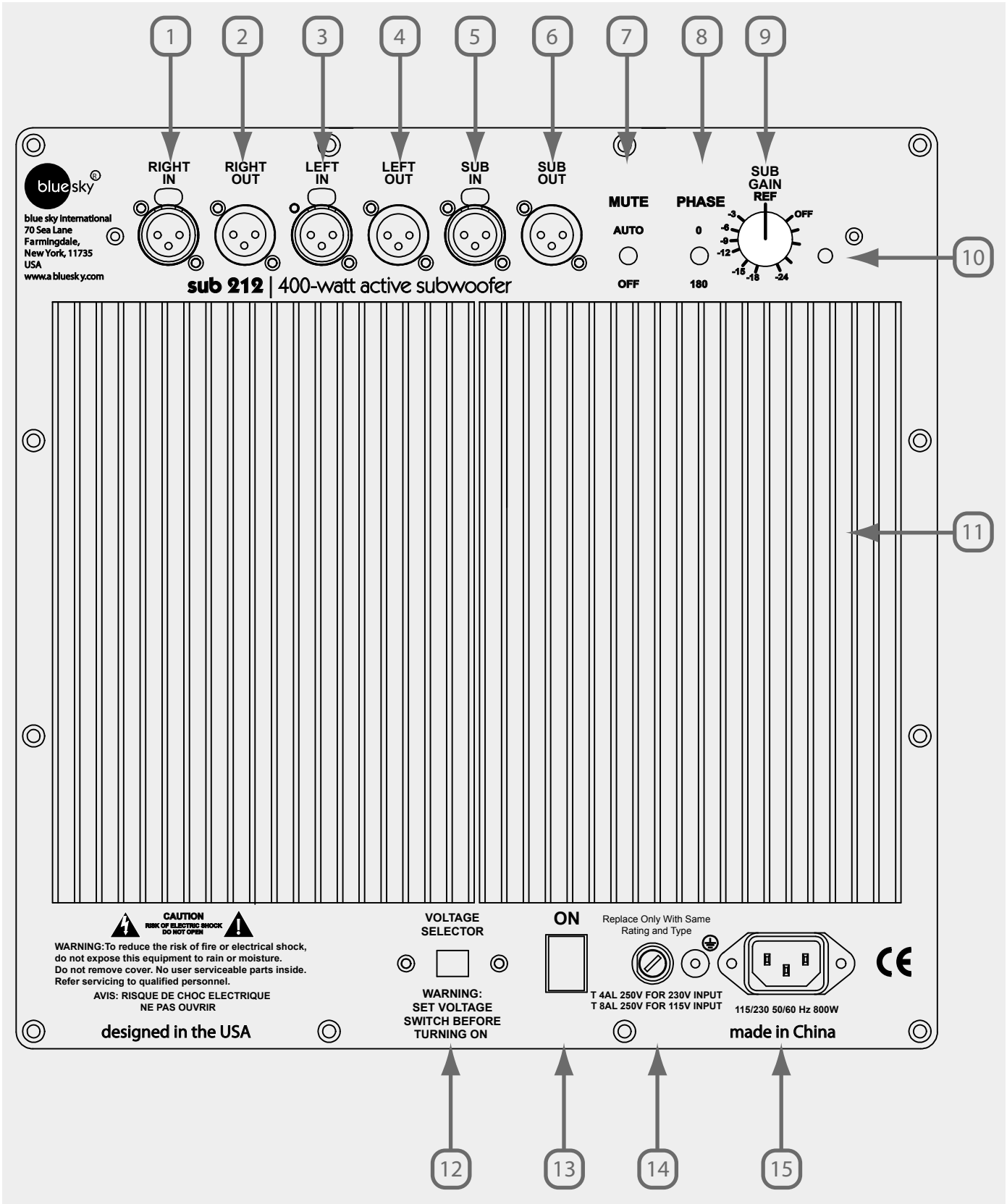
Step 6 Feed 40-80Hz pink noise signal to the left channel only. Adjust the subwoofer level control until the subwoofer reads 85dBc (slow) at the mix position. The meter will bounce around a little, so you will need to do a mental average (*I tend to filter out the peaks in my mind, so I don't set the sub too hot*). The right channel should measure about the same and no additional adjustments need to be made.

Step 7 You can play the full-bandwidth pink noise, assigning it to the left and then the right channel (not at the same time). You should measure about 85dBc. It may be a little higher, because below 30Hz the room may have a little extra gain. No adjustments should be made with Full Bandwidth pink noise, unless you have an RTA (real time analyzer) or other spectrum analyzer.

Step 8 The calibration process has now been completed. Congratulations! If you have any questions, please do not hesitate to contact us directly with your questions. (516) 249-1399 (9:00am to 5:30pm EST) or visit our website / forum @ www.abluesky.com.

SUB 212

USER MANUAL • 7 • A TOUR OF THE SUB 212 AMPLIFIER & ELECTRONICS



SUB 212

USER MANUAL • 7 • A TOUR OF THE SUB 212 AMPLIFIER & ELECTRONICS

1. RIGHT XLR IN - These XLR inputs should be connected to the left / right output of your console or digital workstation. The inputs are electronically balanced. Do not connect more than one source to these inputs. Refer to page 6 for more information [System Signal Flow & Connections].
2. RIGHT XLR OUT- These XLR outputs should be connected to the inputs of your left / right nearfield or mid-field monitors. The outputs are electronically balanced. Refer to page 6 for more information [System Signal Flow & Connections].
3. LEFT XLR IN - These XLR inputs should be connected to the left / right output of your console or digital workstation. The inputs are electronically balanced. Do not connect more than one source to these inputs. Refer to page 6 for more information [System Signal Flow & Connections].
4. LEFT XLR OUT- These XLR outputs should be connected to the inputs of your left / right nearfield or mid-field monitors. The outputs are electronically balanced. Refer to page 6 for more information [System Signal Flow & Connections].
5. SUB IN - This XLR input can be connected to either the subwoofer output of an external bass-management controller, or the "daisy-chain" output of a SUB 212. This input is full-bandwidth (up to approximately 200Hz) and does not use a low pass filter.
6. SUB OUT- This balanced XLR output can feed additional subwoofers for increased bass performance and should be connected to the SUB IN of an additional SUB 212. The output contains the summed low passed subwoofer output and the SUB IN audio.
7. MUTE Switch - This switch is used to activate the automatic mute circuit built into the subwoofer. When the automatic mute circuit is activated, the system will automatically mute both the subwoofer and satellite outputs when no signal is present for 15 minutes. This mode also reduces power consumption at idle. Once a signal is present again, the system will automatically turn on.
8. PHASE - This switch is used to change the phase response of the subwoofer only. When this switch is in the 0 position, it is in-phase with the signal going to the nearfield or mid-field monitors. When this switch is in the position marked 180, it is 180 degrees out-of-phase with the signal going to the nearfield or mid-field monitors. The PHASE setting on the SUB 212 should typically be set to 0, especially when the SUB 212 is used with Blue Sky SATs. However, there may be times, depending on the speakers used with the SUB 212 or because of certain acoustic conditions, that the phase setting needs to be set to 180, so as to get proper summation between SAT and SUB. The only way to be absolutely sure which setting is appropriate for your studio is to use an acoustic analyzer.
9. SUB GAIN - This knob controls the input sensitivity of the subwoofer amplifier only. When set to the reference position a 200mV signal at the input equals 100dB output at a meter.
10. Rear Power LED - This power LED indicates the SUB 212 is powered ON.
11. AMPLIFIER HEATSINK- The heatsink provides essential cooling to the amplifier inside the SUB 212. Please ensure that proper air circulation is available for proper cooling.
12. VOLTAGE SELECTOR SWITCH- This switch can be set to either 115 Volts or 230 volts. Prior to powering this unit, please confirm that the Voltage selector switch, located on the back of the subwoofer, has been set to the correct voltage setting. If you are unsure of the type of power that is supplied to your home / studio, consult your product dealer or local power company. If your changing the Voltage, please also confirm the proper fuse is installed [see number 14].
13. POWER SWITCH - Controls the power to the amplifier and all internal electronics.
14. FUSE - Replace with same rating and type for your local voltage rating. For 115V applications use a 8 Amp T 250V and for 230 Volt applications use a 5 x 20mm, 4 Amp, T 250V fuse ("T" = Time Delay or SloBlo type fuse).
15. IEC RECEPTACLE - Check voltage selector switch before connecting power. Connect to 115 Volt AC / 60Hz power source, rated for 800 WATTS or 230 Volt / 50Hz rated for 800 WATTS.

So now that my system uses an integral subwoofer, how do I place it in my studio for the best possible low frequency performance?

The low frequency response and efficiency of a subwoofer are heavily influenced by the acoustics of the playback environment. More specifically, the response is influenced by the room's dimensional ratios, types of construction and location of the subwoofer within that environment. You can significantly improve the subwoofer's in-room response and efficiency by experimenting with various room placements until you find an optimum location.

When placing the subwoofer there are several general guidelines that should be kept in mind. These include:

- Every acoustic space is unique and experimentation is an important key in finding the best possible location in your particular environment.
- A subwoofer becomes more acoustically efficient (has greater output) as you move it closer to a room surface (e.g. wall or floor).
- A subwoofer will give maximum output and maximum acoustic excitement when it is located in a corner.
- Under certain acoustic conditions corner locations are optimum; in others they can excite multiple "room modes", producing "muddy" or "boomy" sound.

The following methods have been found to work successfully under most conditions:

The first method described below doesn't require any special test equipment. It does require a pair of good ears and familiar broad-spectrum music material – recordings with lots of energy across a wide frequency range (from low to high). The recordings should be highly dynamic and be of relatively high quality.

The second subwoofer placement method requires using a real time analyzer – such as those made by Gold Line™ or The Audio Toolbox(TM) by TerraSonde(TM). Although many home audio enthusiasts may not have access to this equipment, if you are having a sound system or home theatre system professionally installed, this information may be useful to the installer.

Method 1

Place the subwoofer at the main listening position and connect and make sure it is properly connected to your receiver. Turn on the CD or music source and make sure that the level of the subwoofer has been raised high enough so that low frequencies are not masked by the background noise in the room. Once you have roughly balanced the level, between the sub and main speakers, move around the room and pay careful attention to where the spectral response is smoothest and has the greatest low frequency extension, pay special attention to the corners and along the walls. Also, make sure to pay attention to where the system has its' greatest impact and definition. You are not just listening for the most boom, but rather where the bass is most accurate and natural sounding. Remember, because the subwoofer is basically omni-directional, the best spot for the subwoofer can be next to, or even behind, the main monitoring area.

After finding the spot where the subwoofer has the best response in the room, place the subwoofer in that location. Now, listen from the main position and confirm that the subwoofers response is similar to when the positions were reversed. If it is, then leave the subwoofer in that location. If not, continue to experiment with the subwoofer location until the most accurate and best response has been achieved.

Method 2

Subwoofer placement using a real time analyzer – Such as those made by Gold Line™ or The Audio Toolbox™ by TerraSonde™ etc.

Place the subwoofer at the main listening position and connect the subwoofer to your pink noise generator. Turn on your pink noise generator and make sure that the level of the subwoofer has been raised high enough so that low frequencies are not masked by the background noise in the room. Now set the analyzer to 1/12 octave resolution (or whichever setting provides the highest resolution on your particular analyzer), real time mode and begin to take measurements around the room. If the analyzer you are using has the ability to do real time averaging, then use this function to better analyze the spectral response. Please note that as you are doing measurements, it is best to keep the microphone at about 8 to 12 inches off of the ground, which is about the height of the center of the subwoofer driver.

As you walk around the room, be sure to pay careful attention to where the spectral response is smoothest and has the greatest low frequency extension, pay special attention to the corners and along the walls. Remember, because the subwoofer is basically omni-directional, the best spot for the subwoofer can be next to, or even behind, the main monitoring area.

After analyzing the data and finding the spot where the subwoofer has the best response in the room, place the subwoofer in that location. Now, take some additional measurements from the listening position and confirm that the subwoofers response is similar to when the positions were reversed. If it is, then leave the subwoofer in that location. If not, continue to experiment with the subwoofer location until the smoothest and best response has been achieved.

Additional Notes:

It has been found that a subwoofers' in-room response can sometimes be improved by facing the drivers toward a wall. Again, experimentation is the key to finding the best possible location.

Properly designed subwoofers generate tremendous energy, so they may vibrate objects close to them. If you hear buzzing or vibrating objects, make sure to try and dampen those objects. Rattling, buzzing and other sympathetic resonances can make the subwoofer localizable and therefore should be avoided. Using a sine wave generator can be helpful in locating these acoustic anomalies.

SUB 212

USER MANUAL • 9 • TECHNICAL SPECIFICATIONS

This next section outlines the components, specifications and performance data that make this product such a uniquely high value.

In order to continually improve all of its products Blue Sky reserves the right to change these specifications without notice.

SUB 212 Active Subwoofer

Enclosure
* .75" MDF with 1" front and rear baffle and internal bracing
* Isolation feet included
* Dimensions: 24.2" H x 15" W x 21.4" D (inc / heatsink and grill)
* Weight 96 lbs. / 44 kg

Dual 12" Hemispherical Woofers
* 12" long excursion design
* Cast aluminum frame
* 2" high temperature voice coils
* Mica filled polypropylene cone
* Fully video shielded

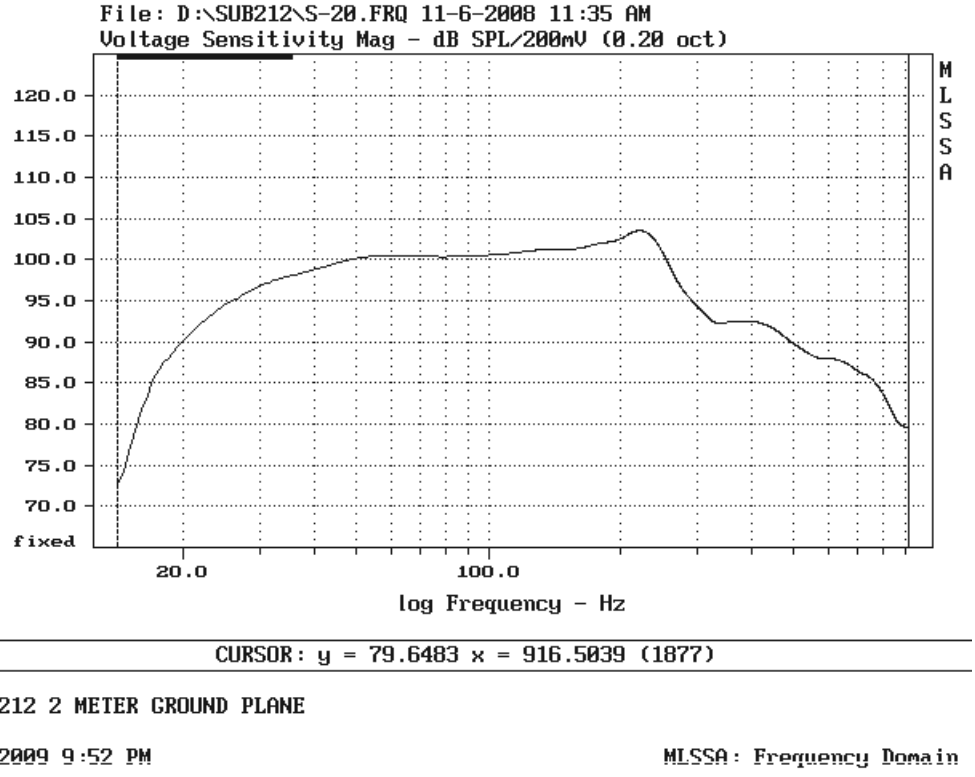
Electrical Specification
* Input Voltage 115/230 VAC 50/60Hz switchable
* Wattage 800 Watts
* Fuse 115VAC 8A - 250 V 5x20mm (Time Delay or Slo-Blo)
  230VAC 4A - 250 V 5x20mm (Time Delay or SloBlo)

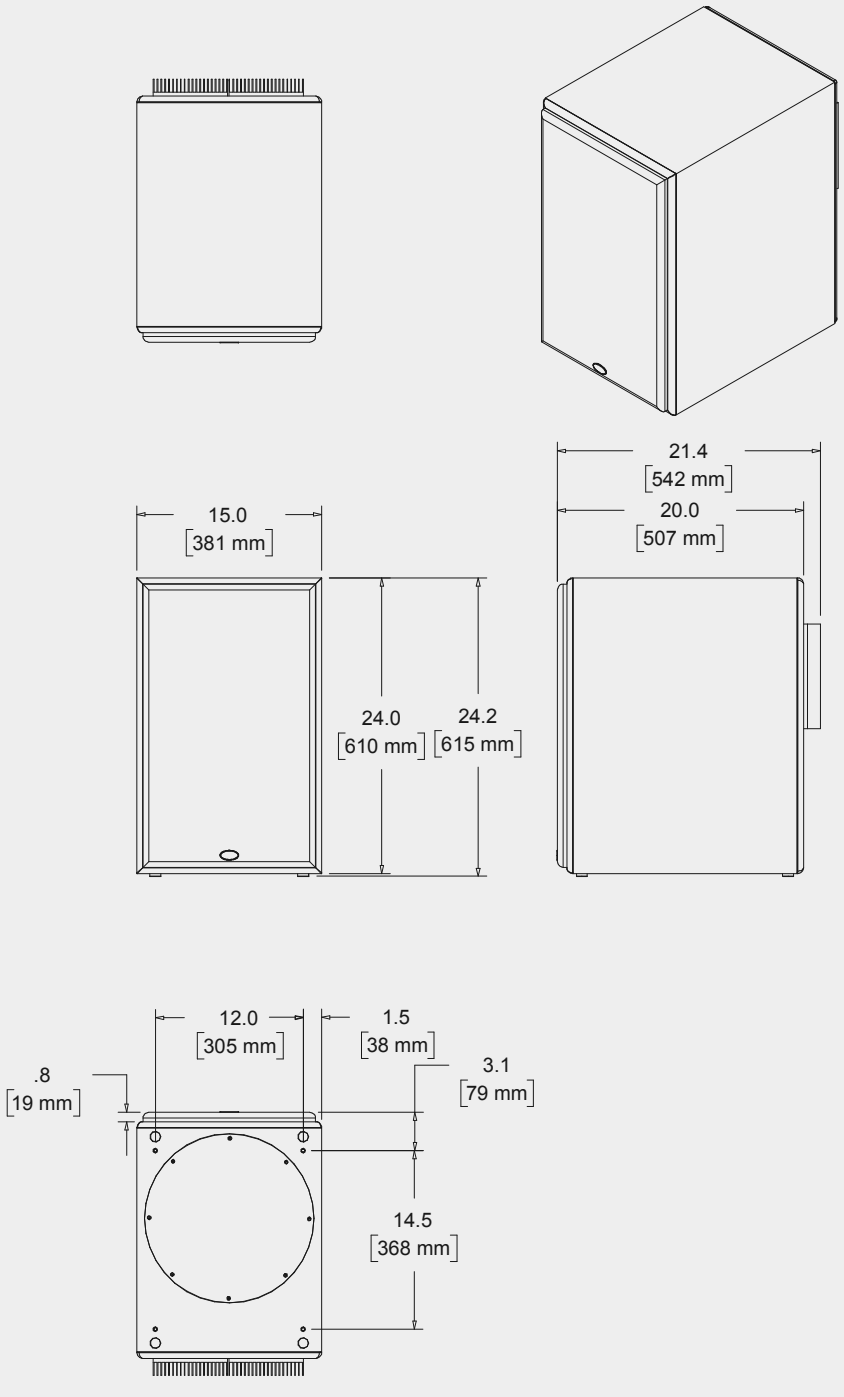
Amplifier
* Class AB design
* 2 x 200-Watts RMS into 4-Ohm
* .1% THD + noise at rated power @ 1kHz
* XLR balanced input
* Adjustable gain control
* Voltage Sensitivity 200mv = 100dB SPL@1m

Frequency response characteristic:
* +/-3dB 25Hz to 200Hz (see graph below)

Bass-Management Section

* Input impedance	20K balanced
* Common mode rejection	40dB typical @ 60Hz
* Maximum Input Level	+24dBu balanced
* Output Impedance	200 Ohms balanced
* Nominal gain	0dB
* Low-Pass Filter Type	4th order Linkwitz-Riley
* Low-Pass Cutoff	80Hz
* High-Pass Filter Type	2nd order Linkwitz-Riley
* High-Pass Cutoff	80Hz
* THD + Noise	0.002% @ 1kHz @ 4dBu
* SUB IN low pass filter	None




21.4
[542 mm]
20.0
[507 mm]
15.0
[381 mm]
24.0
[610 mm]
24.2
[615 mm]
12.0
[305 mm]
1.5
[38 mm]
.8
[19 mm]
3.1
[79 mm]
14.5
[368 mm]

11. Factory Service Instructions

Service for the U.S. versions of Blue Sky products is available only from our authorized distributor, Group One Ltd., located in Farmingdale, New York. (Service for Blue Sky products outside the United States can be obtained through local dealers or distributors.) If your monitor needs service, follow these instructions:

1. Review the manual and ensure that you have followed all setup and operating instructions.

2. Call (516) 249-1399 9:00am to 5:30pm EST and ask for Customer Service. Explain the problem and request an RA (Return Authorization) number. It is important to have your product serial number available when you call. You must have an RA number before you can obtain service.

3. Pack the product in its original packing material and box. Please do not return the manual or any mounting hardware etc. If you don't have the original packing material and/or box, please let Customer Service know when you call for the RA number. Blue Sky is not responsible for any damage that occurs due to non-factory packaging.

4. Include a legible note stating your name, shipping address (no P.O. boxes), daytime phone number, RA number, and a detailed description of the problem, including how it can be duplicated

5. Write the RA number on the top of the carton.

6. Ship the product to the address below. We recommend United Parcel Service (UPS). Please insure the product regardless of shipping method.

Blue Sky International
ATTN: SERVICE DEPT / RA#
70 Sea Lane
Farmingdale, NY 11735
USA

7. Turnaround time is three to five business days depending on the problem. When calling for RA numbers, please ask Customer Service what the turnaround time is. The serviced product will be sent back to you via the same shipping method as received (i.e. if you ship your monitor UPS Ground it will be returned UPS Ground, UPS Red will be returned UPS Red etc...). This only applies to products serviced under the warranty.

12. General Contact Details

For sales and other enquiries, please contact Blue Sky at:

Blue Sky International
70 Sea Lane
Farmingdale, NY 11735
USA

tel: 516 249 1399
fax: 516 249 8870
email: **support@abluesky.com**

To discover the very latest information check out our website at:

www.abluesky.com

13. Recycling Information

Blue Sky products are designed to last many years. However, if it turns out that your Blue Sky product is damaged beyond repair, please take care that it is properly recycled in an authorized recycling facility and in accordance with all local environmental legislation.

Dismantling of Blue sky products should be done by qualified individuals only. End users should not attempt to dismantle any Blue Sky product!

Note the following aspects about recycling some of the main components of our SUB 212 studio monitor:

Packing material: Cardboard and plastic can be recycled or burned in a waste disposal oven.

Studio Monitor / Speaker Drivers: These items contain several different materials so they should be dismantled for recycling.

Electronic Components: These items can be recycled according to your local electronic equipment recycling standards. Do not burn any of the amplifier components.

Wiring, Cables and Connectors: These items can be reused in a suitable application or recycled according to your local electronic equipment recycling standards.

Cabinets: MDF cabinets can be burned in a controlled high temperature waste disposal oven.

blue sky